

CLAIMS

1. A method of acquiring a gated pilot signal in an expanded PN space split into a plurality of N non-overlapping groups of specific pilot offsets, wherein the N groups are defined such that when $PN_INC = \max$, a search of only a first of the N groups is necessary for acquisition of the gated pilot signal, while when $PN_INC < \max$, a search of N or fewer groups is necessary for acquisition of the gated pilot signal, the method comprising:

if $PN_INC = \max$, searching the first group to identify the gated pilot signal;

if $PN_INC < \max$, searching at least the first group to identify the gated pilot signal, but fewer than N groups; and

identifying the gated pilot signal from the searched groups.

2. The method of claim 1, wherein N is four and max is four.

3. The method of claim 1, wherein the searched groups are searched in parallel.

4. The method of claim 1, wherein the searched groups are searched sequentially.

5. The method of claim 1, wherein the expanded PN space is an integer multiple of 32,768 chips, where the integer multiple is greater than one.

6. The method of claim 1, wherein the gated pilot signal conforms to IS-856 standard.

7. The method of claim 1, further comprising:

if the gated pilot signal is not identified after searching at least the first group, searching a last group of the N groups.

Sub
av

8. A method for searching for a gated pilot reference in a wireless communication system, comprising:

partitioning an overall code space in which the pilot reference may be found into a plurality of groups of codes;

ordering the plurality of groups based on likelihood of detecting the pilot reference in each of the groups;

searching for the pilot reference in accordance with the ordered groups; and

terminating the searching upon acquisition of the pilot reference.

9. The method of claim 8, wherein each code corresponds to a particular chip offset of a pseudo-noise (PN) sequence used to generate the pilot reference.

10. The method of claim 9, wherein the overall code space is partitioned into four groups.

11. The method of claim 9, wherein each group includes a plurality of code sets and each code set is representative of a specific PN sequence with at a particular offset.

12. The method of claim 11, wherein the plurality of groups include a first group of code sets most likely to be used to generate the pilot reference and a last group of code sets least likely to be used to generate the pilot reference.

13. The method of claim 8, wherein the searching for the pilot reference is performed for each group and includes

detecting for the pilot reference in a set of samples based on the codes in the group to provide one or more candidate peaks, and

processing each candidate peak to determine acquisition of the pilot reference.

Sub
a1

11/01/01 11:01:01

14. The method of claim 13, wherein the searching for the pilot reference further includes pipelining the detecting and processing for different groups to shorten pilot acquisition time.

15. The method of claim 8, wherein the searching for the pilot reference is performed for each group and includes:

detecting for the pilot reference in a set of samples based on the codes in the group to provide a plurality of detected peaks,

dwelling on the plurality of detected peaks to provide one or more candidate peaks, and

processing each candidate peak to determine acquisition of the pilot reference.

16. The method of claim 15, wherein the detecting and dwelling are performed on different sets of samples.

17. The method of claim 15, wherein the detecting and dwelling are performed using different sets of parameter values.

18. The method of claim 15, wherein each group is partitioned into a plurality of segments, and wherein the detecting is performed on each of the plurality of segments and one or more detected peaks are provided for each segment.

19. The method of claim 8, wherein the searching is performed using a plurality of stages, wherein each stage is associated with a respective set of parameter values used for the searching.

20. The method of claim 19, wherein the searching is performed for the plurality of groups for one stage at a time.

Sub
ai

terminating the searching upon acquisition of the pilot reference.

26. A receiver unit in a wireless communication system, comprising:

a searcher element configurable to receive and correlate a first set of samples in accordance with a plurality of groups of PN sequences to provide correlated values used to detect a gated pilot reference, wherein the plurality of groups comprise an overall code space in which the pilot reference may be found and are ordered based on likelihood of detecting the pilot reference in each of the groups, and wherein the plurality of groups are used to searched for the pilot reference based on their order and searching terminates upon acquisition of the pilot reference.

27. The receiver unit of claim 26, further comprising:

a demodulation element configurable to receive and process a second set of samples based on a candidate peak, found via processing of the correlated values, to provide an indication of the acquisition of the pilot reference.

28. The receiver unit of claim 27, further comprising:

a controller configured to direct operation of the searcher element and the demodulation element.

29. The receiver unit of claim 28, wherein the controller is further configured to provide to the searcher element a set of values for parameters used to correlate the first set of samples with the groups of PN sequences.

Sub
a1

11/11/01 11:11:11